REMARKS

Claims 18-28 were pending in this application. Claims 18-27 have been rejected under 35 USC 103(a) as being unpatentable over Fukuyoshi et al. (U.S. Serial No. 5,667,853). Claim 28 has been rejected under 35 USC 103(a) as being unpatentable over Fukuyoshi et al. in view of Yatabe et al. (U.S. Serial No. 4,234,654). Claim 18 is amended and new claims 29-32 are added herein. Claim 25 is canceled. As a result, claims 18-24, and 26-32 are now pending in this application.

Specification

The specification is amended herewith to address the points raised by the Examiner with regard to the terms "conductivity" and "sheet resistance." Specifically, in the first paragraph on page 2 of the Office Action mailed on January 10, 2005, the Examiner requested that the Applicants change "at least 400 ohms/square" to "less than 400 ohms/square." Since the Applicants have complied with this request by the present amendment, withdrawal of any rejections or objections regarding the specification is respectfully requested.

Claim Rejections

Amended independent claim 18 recites a substantially transparent electrode assembly comprising a substrate, a high index layer formed on the substrate, a conductive layer formed on the high index layer, a high index top layer having a conductivity ranging from about 100 ohms/square to about 400 ohms/square and a thickness ranging from about 20 nm to about 100 nm formed on the conductive layer, at least the top layer and the conductive layer being patterned so as to divide the conductive layer into a plurality of discrete electrodes, and a layer of silica disposed on the substrate.

New independent claim 29 recites a substantially transparent electrode assembly comprising a substrate, a high index layer formed on the substrate, a conductive layer formed on the high index

layer, a high index top layer having a conductivity ranging from about 100 ohms/square to about 400 ohms/square and a thickness ranging from about 20 nm to less than about 30 nm formed on the conductive layer, wherein the thickness of the high index top layer is about 20 nm to less than about 30 nm, at least the top layer and the conductive layer being patterned so as to divide the conductive layer into a plurality of discrete electrodes.

New dependent claim 30 incorporates a hard coating within the electrode assembly while new dependent claim 31 provides details relating to the hard coating. New dependent claim 32 provides additional details with regard to the layer of silica now recited in amended claim 18. Specifically, new claim 31 recited a hard coating having a thickness from about 1 μm to about 15 μm. Additionally, new claim 32 recites a layer of silica having a thickness from about 10 nm to about 30 nm.

Fukuyoshi et al., the CERAC reference and Yatabe et al. fail to show or suggest the claimed invention

Independent claim 18 is patentable over Fukuyoshi et al., the CERAC technical publication and Yatabe et al. because none of these references, either alone or in combination, shows or suggests a substantially transparent electrode assembly including a high index top layer having a conductivity ranging from about 100 ohms/square to about 400 ohms/square with a layer of silica disposed on the substrate. In addition, a substantially transparent electrode assembly wherein the thickness of the high index top layer is about 20 nm to less than about 30 nm as recited in new claim 29 is not disclosed in the cited references. Further, new claims 30-32 are patentable over the cited references because none of the references alone or in combination show or suggest the thickness ranges, layers, or coating recited in the claims.

The conductivity ranges and layer thicknesses (claim 18, claims 29-32) recited by Applicants distinguish the claimed invention from the prior art. "While the measurement of a physical property may not of itself impart patentability to otherwise unpatentable claims, when the measured property serves to point up the distinction from the prior art, or advantages over the prior art, that property is relevant to patentability, and its numerical parameters can not only add precision to the claims but also may considered, along with all of the evidence, in determination of patentability." In re Glaug, 62 U.S.P.Q.2d 1151, 1155 (Fed. Cir. 2002). Applicant's experimentation with temperature, fabrication techniques to achieve desired sheet resistances and conductivity levels, and the use of coatings to promote adhesion between the substrate and the lower high index layer, as evidenced by the claims, further differentiate the present invention from the cited prior art. These factors support a determination of patentability of the present invention and a finding of non-obviousness over the cited references.

Fukuyoshi et al. disclose a multilayered conductive film including a silver-based layer formed of a silver-based metallic material, and first and second transparent oxide layers being independently formed of a compound oxide material of indium oxide. As the Examiner admits, Fukuyoshi et al. fail to teach that the transparent oxide top layer has a conductivity ranging from about 100 ohms/square to about 400 ohms/square.

Instead, the Examiner states that the CERAC technical publication "teaches that high conductivity is balanced against high transmission in the visible light region, and that indium tin oxide must have a conductivity...or sheet resistance of greater than 100 ohms/square in order to obtain visible region transmission near 90%." The Examiner states that it would have been the result of routine experimentation for one of ordinary skill in the art to use indium tin oxide with a conductivity ranging from about 100 ohms/square to about 400 ohms/square as the transparent

oxide top layer of Fukuyoshi et al. However, the present specification states that the preferred materials and processes for forming the top layer are the same as those for forming the insulating layer, except that the condition used to deposit the top layer should be varied so as to give the top layer substantial conductivity. See specification page 8, lines 1-4.

In addition, the CERAC technical publication discloses that the "optical and electronic properties of ITO films are highly dependent on the deposition parameters and the starting composition of evaporation material used." Therefore, there is no suggestion or motivation within Fukuyoshi et al. or the CERAC publication to vary the condition used to deposit the high index top layer and the high index layer in the way suggested by the Examiner to make the present claimed invention. However, even if the cited references teach what the Examiner claims they teach, none of the references teach or motivate one skilled in the art to tailor the deposition process to achieve the sheet resistance or conductivity ranges required by the invention. In essence, none of the cited references provide the motivation for one skilled in the art to obtain the specific conductivity ranges recited in the claims.

Although the Examiner cites to CERAC and Fukuyoshi et al., the cited references provide neither the motivation behind the present invention, nor the suggestion to combine these references in order to arrive at the claimed conductivity ranges. Instead, the Examiner selects isolated statements from the cite references, and combines them to reconstruct Applicants' invention. Applicants submit that the Examiner's combinations represent a classic application of hindsight, and that the prior art contained no suggestion to combine the cited references as applied by the Examiner. Since no suggestion to combine is apparent from the prior art, Applicants submit that such hindsight is the only explanation for picking out single, isolated statements from the references discussing unrelated inventions. As succinctly stated by the Federal Circuit, "One cannot use hindsight reconstruction to

pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." In re Fine, 837 F.2d 1071. Therefore, there is no suggestion or motivation to combine the CERAC publication with Fukuyoshi et al. to make the claimed invention, absent the application of hindsight.

Furthermore, none of CERAC, Fukuyoshi et al. or Yatabe et al. disclose or suggest using a layer of silica for promoting adhesion between the high index layer and the substrate. In fact, Fukuyoshi et al. discloses using a coating as a moisture seal for the uppermost electrode layer such that the coating is only in intermittent contact with the substrate surface. In contrast, the claimed approach requires a layer of silica disposed on the substrate. This silica layer promotes adhesion of the high index layer to the substrate. The cited references do not teach or suggest the importance of adhesion promotion in general or the specific goal of adhering the high index layer to the substrate. As such, the cited references fail to teach the present invention.

Yatabe et al. disclose a heat wave reflective or electrically conductive laminated structure composed of a shaped solid substrate, a transparent thin layer having a high refractive index in contact with the substrate, a transparent heat wave reflective layer of an electrically conductive metal in contact with the transparent thin layer, and optionally, a transparent thin layer having a high refractive index in contact with the transparent heat wave reflective layer and a transparent top layer in contact with the transparent thin layer. As mentioned previously, Yatabe et al. do not show or suggest a high index top layer having substantial conductivity. In fact, the Examiner has previously admitted that Yatabe et al. teach a high index layer that is electrically insulating. Therefore, there is no suggestion or motivation to combine Yatabe et al. with Fukuyoshi et al. in the way suggested by the Examiner to make the claimed invention.

For the reasons advanced above, Applicants submit that Fukuyoshi et al., CERAC, or Yatabe et al., either alone or in combination, fail to anticipate the invention or render it obvious.

Accordingly, claims 18 and 29 should be passed to allowance. Dependent claims 19-24 and 26-30, and 31-32 depend directly from independent claims 18 or 29 and thus contain all of the limitations of the independent claim from which they depend. Additionally, new dependent claims 30-32 contain additional limitations that further delineate the invention. As a result, all of the dependent claims are patentable over Fukuyoshi et al., the CERAC publication and Yatabe et al., either alone or in combination, for at least the same reasons set forth above with respect to claims 18 and claims 29-32.

Related Patent

Applicants note that the present application is a divisional application of issued U.S. Patent No. 6,379,509 (the "parent application"). In accordance with the duty of candor under 37 C.F.R. § 1.56, Applicants note that the prosecution history of the related parent application may be relevant to the pending application. Accordingly, the examiner may consider the arguments and rejections made in the parent application as appropriate.

Enclosed is a Petition for a Two Month Extension of Time along with the required fee.

Applicants submit that all of the claims are now in condition for allowance, which action is requested. Please apply any charges or credits to Deposit Account No. 50-1721.

Respectfully submitted,

Jeffrey L. Snow
Registration No. 39,037
Attorney for Applicants
Kirkpatrick & Lockhart Nicholson Graham LLP
75 State Street
Boston, Massachusetts 02109-1808
Tel: 617-261-3100

Date: June 10, 2005